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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/687,166	10/16/2003	Alexi C. Arango	H-359	6811
26245	7590	07/15/2005	EXAMINER	
DAVID J COLE E INK CORPORATION 733 CONCORD AVE CAMBRIDGE, MA 02138-1002			LEWIS, DAVID LEE	
			ART UNIT	PAPER NUMBER
			2673	

DATE MAILED: 07/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/687,166	Applicant(s) ARANGO ET AL.	
	Examiner David L. Lewis	Art Unit 2673	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                                  |                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                      | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                             | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3 - 2/25/2005</u> | 6) <input type="checkbox"/> Other: _____                                                |

Art Unit: 2673

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**1. Claims 1-7, 11-13, 15-24, 26, 28, and 30-34 are rejected under 35**

**U.S.C. 102(e) as being anticipated by Sheridan (5731792).**

**As in claim 1, Sheridan teaches of a dielectrophoretic display comprising: a substrate having walls defining at least one cavity, figure 1 item 10, 13, 22,**

**the cavity having a viewing surface and a side wall inclined to the viewing surface, figure 3 item 18;**

**a suspending fluid contained within the cavity, figure 1 item L1 and L2;**

**a plurality of at least one type of particle suspended within the suspending fluid, figure 1 item L1;**

**and means for applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, figure 1 item V, column 5 lines 50-67.**

Wherein based on electrocapillarity the attraction of dielectric particles into regions of higher electric field is produced, in conjunction with a voltage  $V$ , which can be either DC or AC. The structure of figure 1 is designed to move the dyed polar liquid L1 from one area of a cavity into another area of the same cavity by using effects related to the electrocapillary concept. Dyed polar liquid L1 moves into the reservoir as L2 out.

**As in claim 20, Sheridan teaches of a process for operating a dielectrophoretic display, the process comprising: providing a substrate having walls defining at least one cavity, figure 1 item 10, 13, 22,**

**the cavity having a viewing surface and a side wall inclined to the viewing surface, figure 3 item 18;**

**a suspending fluid contained within the cavity, figure 1 item L1 and L2;**

**and a plurality of at least one type of particle suspended within the suspending fluid, figure 1 item L1;**

**and applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, figure 1 item V, column 5 lines 50-67.**

Wherein based on electrocapillarity the attraction of dielectric particles into regions of higher electric field is produced, in conjunction with a voltage  $V$ , which can be either DC or AC. The structure of figure 1 is designed to move the dyed polar liquid L1 from one area of a cavity into another area of the same cavity by using effects related to the electrocapillary concept. Dyed polar liquid L1 moves into the reservoir as L2 out.

**As in claim 2, Sheridan teaches of** wherein the suspending fluid is substantially uncolored, and has suspended therein only a single type of particle, figure 1 item L2, column 3 lines 52-60.

**As in claim 3 and 22, Sheridan teaches of** wherein at least some of the at least one type of particle are electrically charged, column 3 lines 52-67.

**As in claim 4 and 23, Sheridan teaches of** wherein the suspending fluid has suspended therein a first type of particle having a first optical characteristic and a first electrophoretic mobility, figure 1 item L1,

and a second type of particle having a second optical characteristic different from the first optical characteristic and a second electrophoretic mobility different from the first electrophoretic mobility, figure 1 item L2.

**As in claim 5 and 24, Sheridan teaches of** wherein the first and second electrophoretic mobilities differ in sign, so that the first and second types of particles move in opposed directions in an electric field, column 3 lines 52-67.

**As in claim 6, Sheridan teaches of** wherein the suspending fluid is substantially uncolored, figure 1 item L2, figure 13 item L5.

**As in claim 7 and 26, Sheridan teaches of** further comprising a backing member disposed on the opposed side of the cavity from the viewing surface, figure 1 item 16,

at least part of the backing member having a third optical characteristic different from the first and second optical characteristics, column 2 lines 45-46, column 3 lines 52-60.

**As in claim 11, Sheridan teaches of** wherein the cavity has a non-circular cross-section as seen from the viewing surface, figure 3 item 18.

**As in claim 12, Sheridan teaches of** wherein the cavity has a polygonal cross-section as seen from the viewing surface, figure 3 item 18.

**As in claim 13 and 28, Sheridan teaches of** wherein the at least one type of particle is formed from an electrically conductive material, column 3 lines 60-65.

**As in claim 15 and 30, Sheridan teaches of** wherein the at least one type of particle is formed from a doped semiconductor, column 3 lines 53-67.

**As in claim 16, Sheridan teaches of** wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 1 item 22.

**As in claim 17 and 32, Sheridan teaches of** comprising a plurality of capsules, the capsules being arranged in a single layer, figure 1 items 22.

**As in claim 18 and 33, Sheridan teaches of** wherein the substrate comprises a continuous phase surrounding a plurality of discrete droplets of the suspending fluid having the at least one type of particle suspended therein, column 15 lines 20-35, figure 15 items 200, 202, and 204. Wherein the discrete droplets are represented by different color inks.

**As in claim 19 and 34, Sheridan teaches of** wherein the substrate comprises a substantially rigid material having the at least one cavity formed therein, the substrate further comprising at least one cover member closing the at least one cavity, figure 1 items 12 and 14, wherein substrate 14 forms cavities and substrate 12 covers them.

**As in claim 21, Sheridan teaches of** wherein the electric field is an alternating electric field, column 5 lines 65-67.

**As in claim 31, Sheridan teaches of** wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 12 item 72.

**2. Claims 1-3, 11-22, and 28-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Bryning et al. (5582700).**

**As in claim 1, Bryning et al. teaches of a** dielectrophoretic display comprising: a substrate having walls defining at least one cavity, **figure 1 item 10,**

the cavity having a viewing surface and a side wall inclined to the viewing surface, **figure 1 item 14 and 17;**

a suspending fluid contained within the cavity, **figure 1 item 28;**

a plurality of at least one type of particle suspended within the suspending fluid, **figure 1 item 26;**

and means for applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, **column 14 lines 18-25 and 40-55.**

Wherein based on the application of an alternating voltage of a specific frequency the polar phase spreads in a direction to towards the walls 17.

Art Unit: 2673

**As in claim 20, Bryning et al. teaches of a process for operating a dielectrophoretic display, the process comprising: providing a substrate having walls defining at least one cavity, figure 1 item 10,**

**the cavity having a viewing surface and a side wall inclined to the viewing surface, figure 1 item 14 and 17;**

**a suspending fluid contained within the cavity, figure 1 item 28;**

**and a plurality of at least one type of particle suspended within the suspending fluid, figure 1 item 26;**

**and applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity, column 14 lines 18-25 and 40-55.**

**Wherein based on the application of an alternating voltage of a specific frequency the polar phase spreads in a direction to towards the walls 17.**

**As in claim 2, Bryning et al. teaches of wherein the suspending fluid is substantially uncolored, and has suspended therein only a single type of particle, figure 1 items 28 and 26, column 8 lines 10-35.**

**As in claim 3 and 22, Bryning et al. teaches of wherein at least some of the at least one type of particle are electrically charged, column 3 lines 45-57.**

**As in claim 11, Bryning et al. teaches of wherein the cavity has a non-circular cross-section as seen from the viewing surface, figure 1C item 18, figure 7.**



Art Unit: 2673

**As in claim 12, Bryning et al. teaches of** wherein the cavity has a polygonal cross-section as seen from the viewing surface, column 11 lines 55-65.

**As in claim 13 and 28, Bryning et al. teaches of** wherein the at least one type of particle is formed from an electrically conductive material, column 8 lines 45-65.

**As in claim 14, Bryning et al. teaches of** wherein the at least one type of particle is formed from a metal or carbon black, column 8 lines 45-65.

**As in claim 15 and 30, Bryning et al. teaches of** wherein the at least one type of particle is formed from a doped semiconductor, column 8 lines 45-65.

**As in claim 16, Bryning et al. teaches of** wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 1 item 17.

**As in claim 17 and 32, Bryning et al. teaches of** comprising a plurality of capsules, the capsules being arranged in a single layer, figure 3 items 12.

**As in claim 18 and 33, Bryning et al. teaches of** wherein the substrate comprises a continuous phase surrounding a plurality of discrete droplets of the suspending fluid having the at least one type of particle suspended therein, figure 1C item 24.

**As in claim 19 and 34, Bryning et al. teaches of** wherein the substrate comprises a substantially rigid material having the at least one cavity formed therein, the substrate further comprising at least one cover member closing the at least one cavity, figure 1 items 14 and 16.

**As in claim 21, Bryning et al. teaches of** wherein the electric field is an alternating electric field, column 14 lines 50-55.

Art Unit: 2673

**As in claim 29, Bryning et al. teaches of** wherein the at least one type of particle is formed from a metal or carbon black, column 8 lines 45-65.

**As in claim 31, Bryning et al. teaches of** wherein the substrate comprises at least one capsule wall so that the dielectrophoretic display comprises at least one capsule, figure 3 item 12.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**3. Claims 4-10, 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryning et al. (5582700) in view of Ota (3756693).**

**As in claims 4 and 23, Bryning fails to teach of** a specific embodiment of display having a first and second particles having a first and second optical characteristic and mobility.

**However Bryning teaches of** mixing two or more different dyes 26 in the non polar phase 28 which may be positively charged or negatively charged. Electrophoretic displays having differing charge/mobility particles are well known in the art of electrophoretic displays.

Art Unit: 2673

**Ota teaches of** an electrophoretic display comprising two or more different electrophoretic materials in a suspending medium, having different color and charge polarity or electrophoretic mobility, that may have DC or AC voltage applied for the purpose of imaging the display or erasing the display, column 5 lines 3-15, column 7 lines 50-65, column 8 lines 35-41.

Therefore it would have been obvious to the skilled artisan at the time of the invention to combine the electrophoretic display features of Ota in the electrophoretic display frequency based spreading features of Bryning because Bryning teaches of driving an electrophoretic display having features as taught by Ota, as found in claims 4 and 23.

**As in claim 5 and 24, Ota teaches of** wherein the first and second electrophoretic mobilities differ in sign, so that the first and second types of particles move in opposed directions in an electric field, column 7 lines 50-65.

**As in claim 6, Bryning et al. teaches of** wherein the suspending fluid is substantially uncolored, figure 1 item L2, figure 13 item L5.

**As in claim 10, Ota teaches of** wherein the first and second optical characteristics comprise black and white colors, figure 1 item 6, column 2 lines 60-67, column 7 lines 55-65.

**As in claim 7 and 26, Ota teaches of** further comprising a backing member disposed on the opposed side of the cavity from the viewing surface, figure 4 item 5, at least part of the backing member having a third optical characteristic different from the first and second optical characteristics, figure 4 items 19 and 20, column 7 lines 55-65. Wherein said particles are black and white, and said substrate is opaque or transparent.

**As in claim 25, Ota teaches of** further comprising: applying an electric field of a first polarity to the cavity, thereby causing the first type of particles to approach the viewing

Art Unit: 2673

surface and the cavity to display the first optical characteristic at the viewing surface, figure 4 item 19, column 5 lines 3-16, column 7 lines 55-63;

and applying an electric field of a polarity opposite to the first polarity to the cavity, thereby causing the second type of particles to approach the viewing surface and the cavity to display the second optical characteristic at the viewing surface, figure 4 item 20, column 5 lines 3-16, column 7 lines 55-63.

**As in claim 8, 9, and 27, Bryning et al. is silent as to** wherein the backing member comprises areas having third and fourth optical characteristics different from each other and from the first and second optical characteristics. However said variations represent known design choices to providing color displays as known in the art. Ota teaches of varying the color scheme, column 3 lines 10-50, column 7 lines 55-65, wherein said claims limitations would have been an obvious design choice in view of Ota, as found in claims 8, 9, and 27.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Art Unit: 2673

Claim 1 and 20 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-45 of U.S. Patent No. 5961804. Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim substantially the same subject matter.

**As in claim 1, applicant claims dielectrophoretic display comprising: a substrate having walls defining at least one cavity,**

(patent 5961804 – claim 26 – claims an electrophoretic or dielectrophoretic material comprising a carrier and a dispersion of microcapsules therein – visually contrasting particles),

**applicant claims the cavity having a viewing surface and a side wall inclined to the viewing surface,**

(patent 5961804 – claim 26 – claims carrier and a dispersion of microcapsules therein, particles contrasting visually – therefore a viewing surface)

**a suspending fluid contained within the cavity;**

(patent 5961804 – claim 26 – claims a dyed fluid)

**a plurality of at least one type of particle suspended within the suspending fluid;**

(patent 5961804 – claim 26/28 – claims a plurality of particles dispersed in a carrier liquid)

**and means for applying to the substrate an electric field effective to cause dielectrophoretic movement of the particles to the side wall of the cavity,**

(patent 5961804 – claim 26 – claims being differentially responsive to an electric field such that depending on the direction of the field, at least some of the particles assume a first or second visually differentiable appearance in accordance with bistability characteristic).

As detailed above the applicants claim 1 and the patent 5961804 claim 26/28 claim substantially the same subject matter. The differ because patent 5961804 fails to mention walls and a viewing surface, however these features are a natural consequence of the structure claimed in patent 5961804. A Similar analogy is applicable to the applicants remaining claims 2-20 in view of patent 596104 claims 1-45. As in claims 1 and 20, the applicant claims a dielectrophoretic display. As recited in claim 1, 13, 26, and 36, patent 804 recites a dielectrophoretic display. As in claims 1 and 20 the applicant claims particles in a fluid having a migration responsive to an electric field. As in claims 1, 13, 26, and 36, patent 804 recites a plurality of particles responsive to an electric field. As in claims 4 and 23, the applicant claims a first and second particles having different mobilities. As in claim 36, patent 804 recites a first and second particles having different mobilities. Therefore generally claims 1-20 of the applicants invention are directed to substantially the same subject matter as claims 1-45 of Patent 5961804.

***Response to Arguments***

4. Applicant's arguments, see Amendment, filed 2/28/2005, with respect to the rejection(s) of claim(s) 1-34 under 102(e) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sheridan, Bryning, and Ota. Also a nonstatutory double patenting rejection over Jacobson et al. (5961804) is made. This office action is non-final.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. 5659330

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(571) 272-7673**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on **(571) 272-7681**. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

**or faxed to:**

(703) 872-9314 (for Technology Center 2600 only)

Art Unit: 2673

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

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July 5, 2005



**BIPIN SHALWALA**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2600**